This guide can also be found as an Appendix to the main Biodiversity Metric 4.0 – User guide.

The Biodiversity Metric 4.0

Short Data Input Guide

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The Biodiversity Metric 4.0
Short Data Input Guide

Defra Group

March 2023

The biodiversity metric is hosted by Natural England

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Biodiversity Metric 4.0 builds on a series of previous versions of the biodiversity metric which have been published by Natural England with the input from the Environment Agency and the Forestry Commission, including authors and contributors cited in previous versions.

All versions of the biodiversity metric build on the biodiversity loss/gain framework developed by Jo Treweek and Bill Butcher[1,2], incorporating habitat condition and a new concept of distinctiveness scores, which was subsequently adopted by Defra and Natural England for their biodiversity offset pilots and metric[3].

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[1] Treweek J. et al. (2009) Scoping study for the design and use of biodiversity offsets in an English Context.

[2] Treweek J., Butcher B., and Temple H. (2010) Biodiversity offsets: possible methods for measuring biodiversity losses and gains for use in the UK. CIEEM In Practice.

[3] Defra (2012) *Biodiversity Offsetting Pilots. Technical paper: the metric for the biodiversity offsetting pilot in England* [online]. Defra, London.) Biodiversity Offsetting Pilots. Technical paper: the metric for the biodiversity offsetting pilot in England

Contents

1. Data input guide 5

1.1. General information 5

1.2. Introduction 7

1.3. Start page 7

1.4. Other start page buttons 9

1.5. Main menu 10

1.6. Data entry sheets 12

1.7. Navigating to the results 16

1.8. Tool troubleshooting 17

2. Metric results 20

2.1. Headline Results 20

2.2. Habitat Trading Summary 21

2.3. Detailed results 22

1. Data input guide

This guide can also be found as an Appendix to the main Biodiversity Metric 4.0 – User guide.

1.1. General information

1.1.1. The guide included below provides a walkthrough of each sheet and group of sheets within the metric calculation tool. The metric calculation tool has been designed for use with Microsoft Excel and a basic understanding of the software is required to use it.

1.1.2. The metric tool works best with macros and content enabled. Macros are used for navigation around the tool and for toggling different display modes for streamlined data input. A macro-disabled version is also available.

1.1.3. There are macro-enabled 'buttons' (round edged boxes) within the metric. With macros enabled, they are used to navigate through the tool. These buttons are disabled in the macro-disabled version.

Figure 1-1 Example of a macro enabled 'button

1.1.4. Tabs will automatically populate when a button is clicked. In both versions the tabs at the bottom of the sheet can be used for navigation.

Figure 12-2 Tabs at the bottom of the metric calculation tool

1.1.5. Cells within the calculation tool are colour-coded to aid data entry and interpretation. Icons are also used to convey important information. Colour coding and iconography is set out in Appendix Table A.

Appendix Table A Cell formatting and symbols used within the metric

Cell formatting	Details
Data inputs	
	Fixed cells which do not change value
	Pre-populated values generated by the metric tool
	Results cell
	User data entry cells
Trading rule requirements	
=	Same habitat required
(≥)	Same broad habitat or a higher distinctiveness habitat required
≥	Same distinctiveness or better habitat required
🛠	Bespoke compensation likely to be required
Data flags	
Check ⚠	Attention required
Error ▲	Input error, rules and principles not met

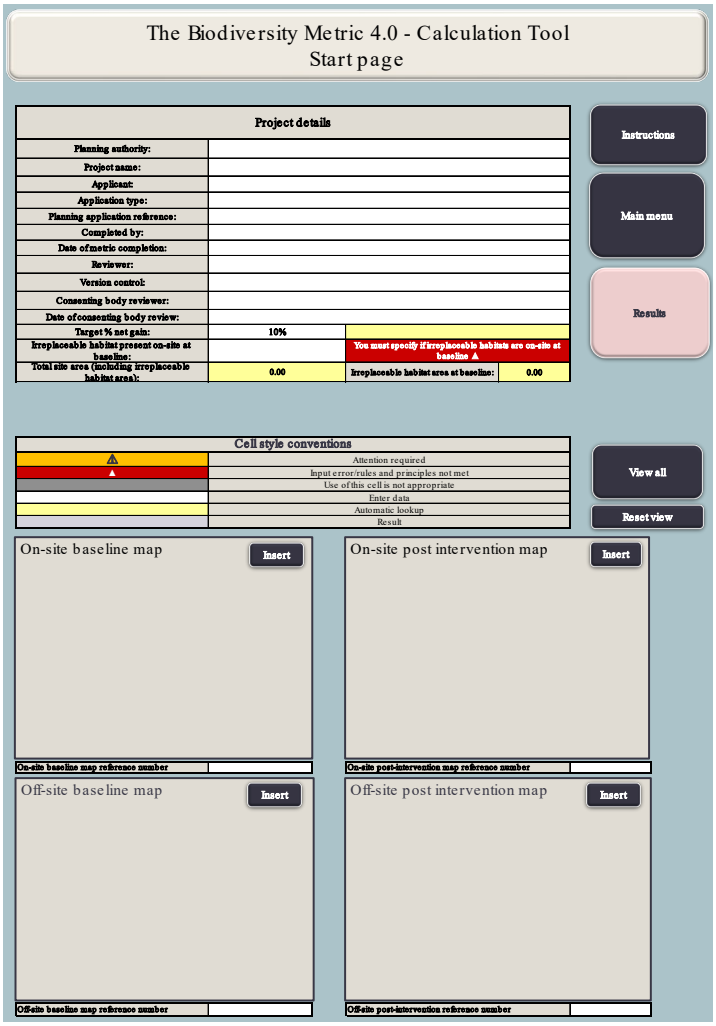
1.2. Introduction

The tool opens on the 'Introduction' tab.

Click on the 'Open tool' button. This will open the 'Start page'.

On the macro-disabled version, all tabs will preload at the bottom of the sheet.

1.3. Start page



All project details that are known or available to the user should be entered into the appropriate cells on the start page. Advice on filling in these cells is provided in Table 13-2.

Images or plans for the baseline and post-intervention scenarios can be added at the bottom of the start page. References can be added to each figure and will be reflected on the appropriate tab later in the metric.

When the start page data entry is complete, click 'Main menu' on the right to open the calculation tool main menu.

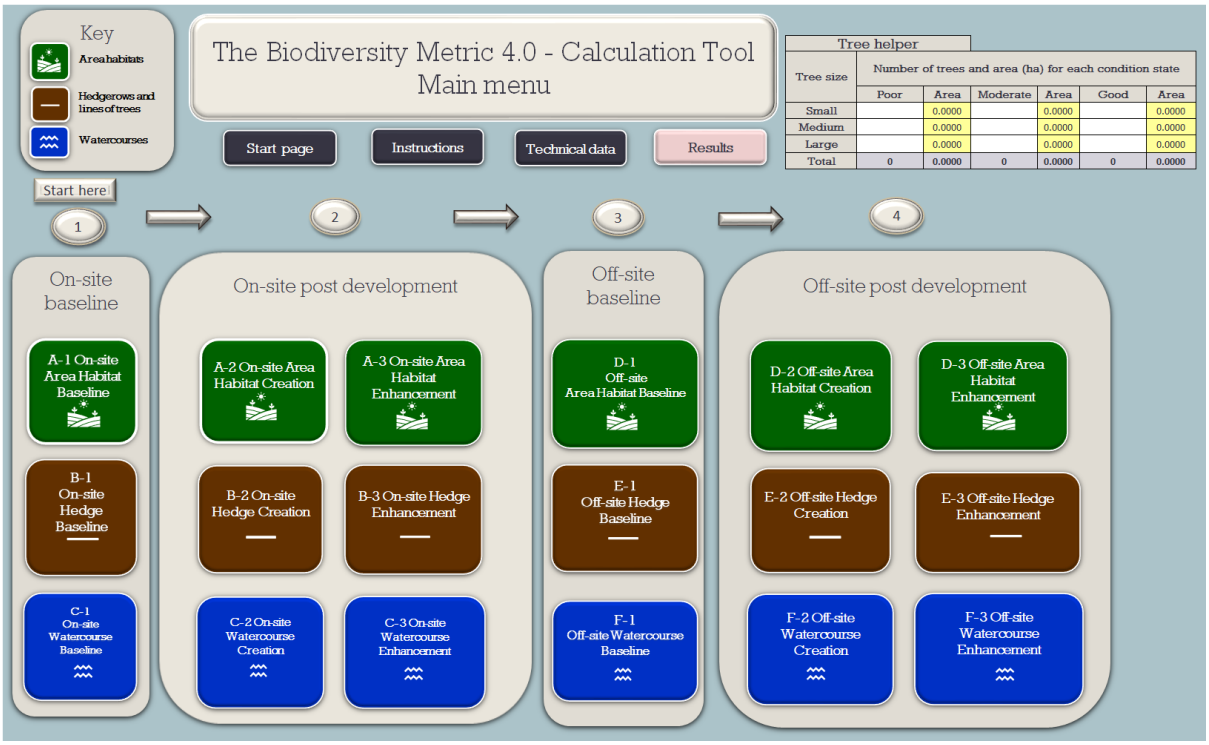
Appendix Table B Project information

Project Details	Information to enter (where relevant)
Planning authority	The determining authority for decision making
Project name	The name of the project and or planning application
Applicant	The applicant applying for permission or approval
Application type	The planning application type
Planning application reference	The planning application reference for the project
Completed by	The name of the user completing the metric
Date of metric completion	The date the metric assessment was completed (not the date of any survey or baseline data collection
Reviewer	For use by a competent person to review user inputs
Version control	For version control to distinguish between different iterations of a metric calculation
Consenting body reviewer	The name of the consenting body or planning authority reviewer
Date of consenting body review	The date the metric was reviewed by the consenting body
Target % gain	The target percentage gain for the project. This defaults to 10%, but can be increased.
Irreplaceable habitat present on-site at baseline	To indicate irreplaceable habitats are present on a site baseline. If 'Yes' is selected the irreplaceable habitats tab will open on the macro-enabled version.
Total site area	No data entry required. This cell automatically displays the total baseline site area (including any irreplaceable habitats) once habitat data sheets have been completed.

1.4. Other start page buttons

	Clicking this button takes you to the metric instructions page.
	Clicking this button opens all tabs of the metric.
	Clicking this button hides all tabs of the metric other than the introduction sheet.
	Clicking this button allows you to choose an image from file to upload baseline and post-intervention mapping
	Clicking this button takes you to the results sheets.

1.5. Main menu



1.5.1. The main menu can be accessed through the 'Main menu' button at the top of each sheet or through the tabs at the bottom of the workbook. Buttons to access the habitat data sheets are organised by:

- metric module (rows):
  - area units (top row)
  - hedgerows units (middle row)
  - watercourse units (bottom row)

- on-site or off-site baseline and post development (grouped in columns):
  - on-site baseline (group 1)
  - on-site post development (group 2)
  - off-site baseline (group 3)
  - off-site post development (group 4)

Tree helper

Tree size	Number of trees and area (ha) for each condition state					
	Poor	Area	Moderate	Area	Good	Area
Small		0.0000		0.0000		0.0000
Medium		0.0000		0.0000		0.0000
Large		0.0000		0.0000		0.0000
Total	0	0.0000	0	0.0000	0	0.0000

The main menu also includes a tree helper to convert the number of individual trees into an area for data input.

Other main menu buttons

	Clicking this button takes you to the metric instructions page.
	Clicking this button takes you back to the metric start page.
	Clicking this button takes you to technical data sheets G-1 to G-8 which detail the data tables and values used by the metric. It can also navigate to the 'Phase 1 Translation tool' sheet which can be used as an aid to convert historic Phase 1 data into other classification systems used by the metric.
	Clicking this button takes you to the results sheets.

1.6. Data entry sheets

1.6.1. From the main menu you can navigate to relevant data entry sheets. Specific instructions for each data entry sheet are provided in the sections below. Each data sheet hosts:

- a summary table proving a running total of unit and percentage change (at the top of the sheet)
- an area converter (m^2 to ha) at the bottom of the sheet
- four functional buttons at the top left of the sheet

1.6.2. The functions of the four buttons hosted at the top left of each data entry sheet are outlined below:

	Click to navigate back to the main menu.
	Click to hide and expand columns*. When hidden, only key data and information is displayed.
	Click to hide and expand rows*. Blank rows are hidden when toggled.
	Click to navigate to this Appendix of the user guide.

*It is recommended that all rows and columns are expanded until all data has been entered. This will avoid any data being obscured. The view can then be toggled accordingly to the user's needs.

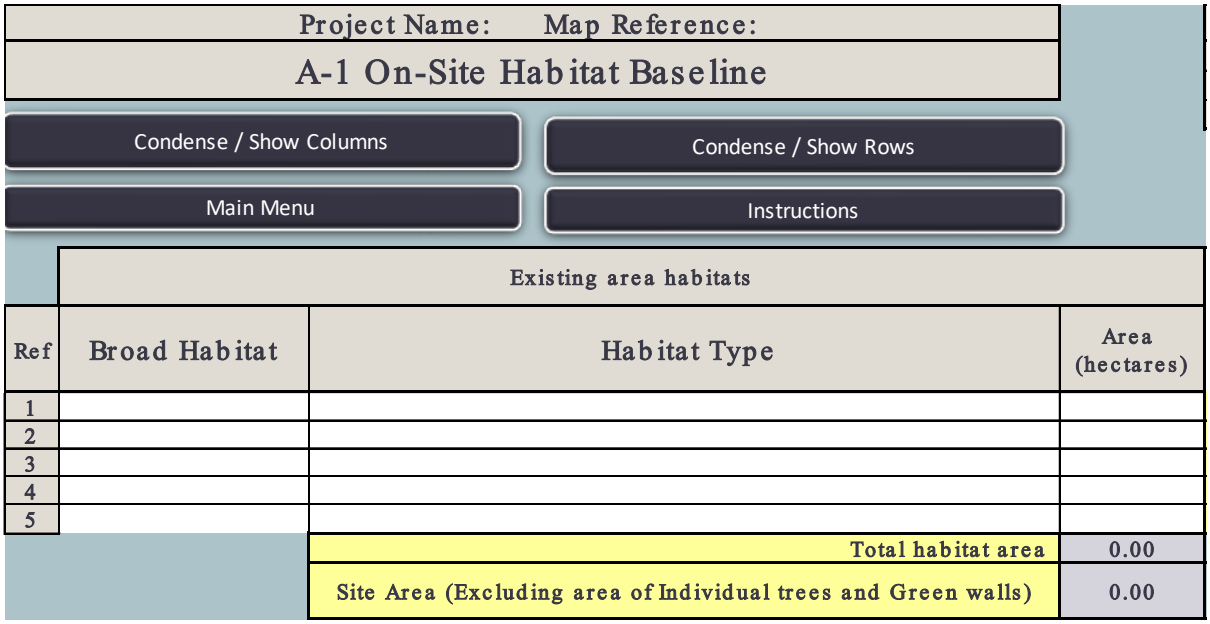


Figure 12-3 Broad habitat, habitat type and area data input boxes for sheet A-1. White cells are for data input.

1.6.3. Fill in the white boxes with your project data. Details on data entry are provided in Appendix Table C. Note that the metric treats baseline habitats as 'lost' unless an area is entered in the tool as retained or enhanced.

Appendix Table C Data input methods for data entry sheets

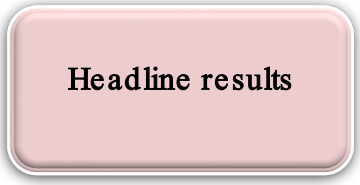
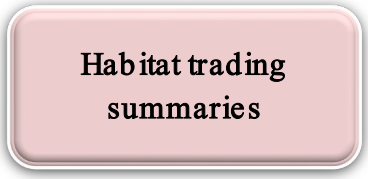
Data requiring manual input	Input method	Notes	Applicable sheets
Broad Habitat	Dropdown list	None.	Area habitat baseline and creation sheets
Habitat Type	Dropdown list	Broad habitat must be selected first.	Area habitat baseline and creation sheets
Proposed broad habitat	Dropdown list	For enhancement only, can be changed where the proposed habitat differs from the baseline.	Area habitat enhancement sheets

Data requiring manual input	Input method	Notes	Applicable sheets
Proposed habitat or proposed watercourse type	Dropdown list	For enhancement only, can be changed where the proposed habitat differs from the baseline.	All enhancement sheets
Area	Manual input (ha)	Area can be entered to any number of decimal places.	All area habitat baseline and creation sheets
Condition	Dropdown list	The list of condition options will not generate unless habitat type is selected.	All sheets
Strategic Significance	Dropdown list	None.	All sheets
Area Retained	Manual input (ha)	An area cannot be both 'Retained' and 'Enhanced'.	All area habitat baseline sheets
Area Enhanced	Manual input (ha)	An area cannot be both 'Retained' and 'Enhanced'.	All area habitat baseline sheets
Bespoke compensation agreed for unacceptable losses	Dropdown list	If losses of very high distinctiveness habitats cannot be avoided then enter if bespoke compensation has been agreed.	Hedgerow and watercourse baseline sheets.
Assessor and Local Authority reviewer comments	Manual input	This is a space for assessors and reviewers to make any comments relating to a specific habitat parcel.	All sheets
GIS reference number	Manual input	Space for GIS users to reference habitat parcels	All sheets
Hedge Number or New Hedge Number	Manual input	Can be used to aid cross-referencing to maps	All baseline and creation hedgerow sheets

Data requiring manual input	Input method	Notes	Applicable sheets
Hedgerow Type	Dropdown list	Condition options will not appear until hedgerow type is selected.	All baseline and creation hedgerow sheets
Length	Manual input (km)	Length can be to any number of decimal places.	All hedgerow and watercourse baseline and creation sheets
Length Retained	Manual input (km)	A length cannot be both 'Retained' and 'Enhanced'.	Hedgerow and watercourse baseline sheets
Length Enhanced	Manual input (km)	A length cannot be both 'Retained' and 'Enhanced'.	Hedgerow and watercourse baseline sheets
Watercourse Type	Dropdown list	Condition options will not appear until watercourse type is selected.	All watercourse sheets
Watercourse encroachment	Dropdown list	None.	All watercourse sheets
Riparian encroachment	Dropdown list	None.	All watercourse sheets
Habitat created in advance	Dropdown list	If nothing is entered, the metric will assume that the habitat will not be created in advance.	All creation and enhancement sheets
Delay in starting habitat creation	Dropdown list	If nothing is entered, the metric will assume that there will be no delay.	All creation and enhancement sheets
Spatial risk category	Dropdown list	None.	All off-site sheets
Off-site reference	Manual input	None.	All off-site sheets

1.7. Navigating to the results

1.7.1. From the ‘Main menu’, select the ‘Results’ button located in the top right-hand side of the page. The results are presented in four separate sheets. Click on the button for the appropriate results sheet.

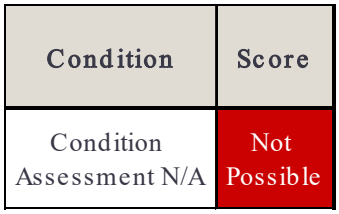
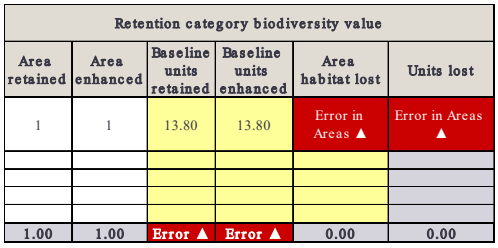
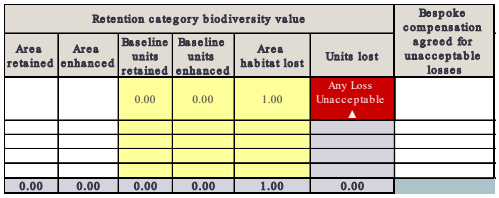
	Click to see overall net changes in biodiversity units and percentage, separated into three sheets.
	Click to understand the proposed changes in habitats and areas.
	Click to see details of trading between habitat types and an indication of whether the development has met trading rules.
	Click to see details of where off-site habitats are provided.

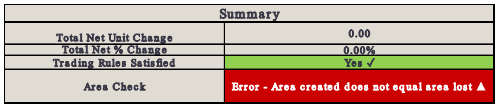
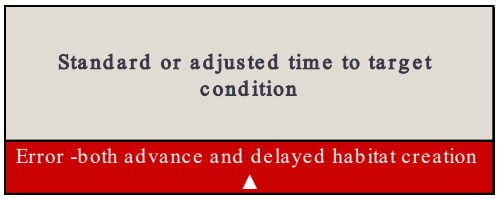
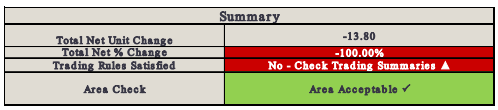
1.8. Tool troubleshooting

1.8.1. Appendix Table D below summarise common issues and any actions required to resolve these. In most cases, an 'error' or 'check' flag will appear to show that a problem has been encountered and to point the user to where this may have occurred.

Appendix Table D Troubleshooting guide

Issue	Action
There are not enough data entry rows in the metric for the site	The metric allows for 248 rows of data entry. It is good practice to put different habitat parcels into different rows. If required, multiple parcels of the same habitat type, condition and strategic significance can be combined into one row if the post-development outcome for those habitat parcels is the same.
The total baseline habitat area or length does not sum correctly	'Total area' / 'Total length' (summed at the bottom of the column) is displayed to two decimal places. This may result in small rounding discrepancies on large sites with many small parcels of habitat. The metric uses the true value entered in each row to calculate overall change in units (and not the displayed rounded value) to calculate. These rounding errors do not impact the results of the calculation tool.
Condense / Show functions are not working	These functions only work for the enhancement tab if the baseline tab is filled in

Issue	Action
The condition score is flagged as ‘not possible’, and the calculation is not resolving  	The habitat type is not compatible with the selected condition score. This can occur if the habitat type selection is changed mid-way through data entry. Re-enter a valid condition input and the error message will disappear.
Error in areas  	If the area of habitat in both categories (enhancement and retained) exceeds the total area of habitat in a row, then the metric tool will not resolve. Any areas marked as enhanced should not also be recorded as retained. Ensure the areas retained and enhanced are not greater than the total area of habitat entered.
Any loss unacceptable  	Once bespoke compensation is agreed, ‘Yes’ can be selected in the ‘Bespoke compensation agreed for unacceptable losses’ cell. This will clear the flag.
Using ‘Fairly’ categories for condition 	Assigning a habitat either of the condition types with the qualifier ‘fairly’ will cause a check flag to be raised. Sound ecological evidence must be provided to justify the use of fairly categories.

Issue	Action
An error flag is triggered if there is a discrepancy bigger than 0.01ha that needs to be addressed.  	'Total area' / 'Total length' is displayed to two decimal places. This may result in small rounding discrepancies. These rounding errors do not impact the results of the calculation tool. If a rounding tolerance of 0.01 is exceeded an error flag will appear. Check the area of habitat entered in the tool for errors, or provide justification as to why areas do not match.
An error flag is triggered stating that both advance and delayed habitat creation have been implemented.  	Both advance and delayed creation cannot be used on the same habitat. Select either the advance creation or the delayed creation but not both. If two parcels of the same habitat are to be created in a staggered approach, then use two rows in the metric to present these separately.
The tool is not calculating a value for enhanced habitats.	This occurs if there is a trading error in either the distinctiveness or condition change cells. Condition must stay the same or improve, including when enhancement to a higher distinctiveness habitat.
Error flag appears, 'No – check trading summaries'.  	The error flag appears if the trading rules are broken within both the summary table at the top of each habitat tab and within the headline results. Consult the relevant trading summary tab for details on why the trading rules have been broken. Greater detail will be provided in the summary tables.

Issue	Action
Habitat enhancement units are not being included in the headline results tab.	Check all the data required in the enhancement tab has been entered correctly and fully (in other words no required cells have been left blank).

2. Metric results

2.1. Headline Results

2.1.1. Once data has been input into the metric the results are calculated and presented on the results pages. The final results are shown at the bottom of the headline results page. The figures below provide a walkthrough of the headline results page.

On-site baseline	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
On-site net change (units & percentage)	*Habitat units*	0.00	0.00%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%

Figure 2-1 This shows biodiversity units the on-site baseline, on-site post-intervention and total on-site net change in biodiversity units. This is not the total project net gain.

Off-site baseline	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site net change	*Habitat units*	0.00	0.00%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%

Figure 2-2 This shows biodiversity units for habitat units for the off-site baseline, off-site post-intervention and total off-site net change in biodiversity units. This does not include spatial risk multiplier deductions.

Combined net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	Watercourse units	0.00
Spatial risk multiplier (SRM) deductions	*Habitat units*	0.00
	Hedgerow units	0.00
	Watercourse units	0.00

Figure 2-3 This shows the sum of the on-site and off-site unit change before the spatial risk multiplier deductions are made. The total biodiversity unit value of spatial risk multiplier deductions are shown separately.

FINAL RESULTS		
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	Watercourse units	0.00
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	0.00%
	Hedgerow units	0.00%
	Watercourse units	0.00%

Figure 2-4 This shows the total net biodiversity unit and net percentage change for the project, including all on-site and off-site interventions and including spatial risk multiplier deductions.

Trading rules satisfied?	Yes ✓

Figure 2-5 This box indicates if trading rules have been met or not. If trading rules have not been satisfied then a net gain in biodiversity cannot be claimed unless trading rules are resolved. The trading rules are not influenced by the spatial risk multiplier and are applied before any spatial risk multiplier deductions.

You must specify if irreplaceable habitats are on-site at baseline ▲

Figure 2-6 This flag at the bottom of the results summary indicates if the user has specified if irreplaceable habitats are on-site at baseline.

2.2. Habitat Trading Summary

2.2.1. There is a separate trading summary sheet for each metric module.

Trading Summary		
Distinctiveness Group	**Trading Rule**	**Trading Satisfied?**
Very High	Bespoke compensation likely to be required 🛠	Yes ✓
High	Same habitat required =	Yes ✓
Medium	Same broad habitat or a higher distinctiveness habitat required ≥	Yes ✓
Low	Same distinctiveness or better habitat required ≥	Yes ✓

Figure 2-7 Trading summary table for area module. If trading rules are satisfied a 'Yes' will show in the right-hand column. If trading rules are not satisfied, then a 'No' will show.

Medium Distinctiveness Summary	
Medium Distinctiveness Units available to offset Lower Distinctiveness Defecit	0.00
Medium Distinctiveness Broad Habitat Deficit to be offset by trading up	0.00
Higher Distinctiveness Surplus Units minus Medium Distinctivenss Broad Habitat Defecit	0.00
Cumulative surplus of units	0.00

Figure 2-8 For each module there is a separate trading summary for each distinctivness band of habitat. The summary table provides an summary of how biodiversity units are contirbuting towards the trading rules.

Medium Distinctiveness					
Habitat group	Group	On-site unit change	Off-site unit change	Project wide unit change	Cumulative broad habitat change
Cropland - Arable field margins cultivated annually	Cropland	0.00	0.00	0.00	0.00
Cropland - Arable field margins game bird mix	Cropland	0.00	0.00	0.00	
Cropland - Arable field margins pollen and nectar	Cropland	0.00	0.00	0.00	
Cropland - Arable field margins tussocky	Cropland	0.00	0.00	0.00	
Grassland - Other lowland acid grassland	Grassland	0.00	0.00	0.00	0.00
Grassland - Other neutral grassland	Grassland	0.00	0.00	0.00	
Grassland - Upland acid grassland	Grassland	0.00	0.00	0.00	
Heathland and shrub - Blackthorn scrub	Heathland and shrub	0.00	0.00	0.00	0.00
Heathland and shrub - Bramble scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Gorse scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Hawthorn scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Willow scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Hazel scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Mixed scrub	Heathland and shrub	0.00	0.00	0.00	
Lakes - Ponds (non-priority habitat)	Lakes	0.00	0.00	0.00	0.00
Lakes - Reservoirs	Lakes	0.00	0.00	0.00	
Sparsely vegetated land - Other inland rock and scree	Sparsely vegetated land	0.00	0.00	0.00	0.00
Urban - Cemeteries and churchyards	Urban	0.00	0.00	0.00	0.00
Urban - Biodiverse green roof	Urban	0.00	0.00	0.00	
Individual trees - Urban tree	Individual trees	0.00	0.00	0.00	0.00
Individual trees - Rural tree	Individual trees	0.00	0.00	0.00	
Woodland and forest - Other Scot's pine woodland	Woodland and forest	0.00	0.00	0.00	0.00
Woodland and forest - Other woodland; broadleaved	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Other woodland; mixed	Woodland and forest	0.00	0.00	0.00	
Intertidal sediment - Littoral coarse sediment	Intertidal sediment	0.00	0.00	0.00	0.00
Intertidal sediment - Littoral sand	Intertidal sediment	0.00	0.00	0.00	
Intertidal hard structures - Artificial hard structures with integrated greening of grey infrastructure (IGGI)	Intertidal	0.00	0.00	0.00	
		0.00	0.00	0.00	

Figure 2-9 More detailed trading results are provided in the detailed habitat trading data tables, the example above shows medium distinctiveness habitats within the area module. Tables are set out by both habitat type and broad habitat group.

2.3. Detailed results

2.3.1. The detailed results tabs provide a breakdown of biodiversity unit change for each habitat type within the metric. This includes auto-generated graphs and charts to aid data interpretation.

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